

Effect of Physical Fitness on the Odds of Training-related Injury in Army Basic Training

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The 10-week Army basic training course (BT) includes a high volume of weight bearing activity that increases risk for training-related injuries. These injuries limit the ability to train and increase the risk for attrition. Previous studies have shown that the injury risk for women in BT is 1.6 to 2.7 times higher than for men. Some studies have found that the overall injury risk for women is significantly reduced when multivariate models adjust for the fitness levels of women and men. **PURPOSE:** The purpose of this retrospective study is to examine the injury risk for women and men in BT while adjusting for aerobic fitness and muscle endurance of new recruits. **METHODS:** Demographics, training-related injuries, and performance data on the initial (1st week of BT) Army Physical Fitness Test (APFT) were linked for 26,454 women and 102,463 men in BT in fiscal years 2010 through 2012. The APFT consists of pushups and situps in 2 minutes and a timed 2-mile run. Gender neutral quintiles were created for the pushup and situp events and the 2-mile run. The 2-mile run time was used as an indicator of aerobic fitness (Q1 [fastest] -> Q5 [slowest]) and pushup and sit-up records were used as an indicator for muscle endurance (Q1 [low] -> Q5 [high]). Univariate and multivariate logistic regression were used to calculate odd ratios (ORs) and 95% confidence intervals. Combinations of demographic and fitness variables were evaluated to determine the best model to estimate risk. **RESULTS:** Overall, 39.8% of women and 15.9% of men experienced a training related injury while in BT. The unadjusted OR for women compared to men (w:m) was 3.49 (3.39-3.58). After adjusting only for runtime, the OR (w:m) dropped to 2.30 (2.22-2.38). When adjusting for age, race, runtime, and pushups, the adjusted OR (w:m) was 2.16 (2.09-2.26). **CONCLUSION:** Women have a higher odds of injury than men; however, when adjusting for aerobic fitness, muscle endurance, race, and age, the odds decrease from 3.5 times higher to 2.2 times higher than men.

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